

Appl. No. 10/771,907
Amdt. dated May 17, 2007
Reply to Office Action of March 7, 2007

Amendments to the Specification:

Please replace the paragraph beginning at page 3, line 2, with the following rewritten paragraph:

It has now been discovered that a combination of ~~a combination of~~ at least one phenolic and at least one thioether is highly effective in inhibiting oxidation in lubricant oil compositions. The hindered phenolic acts synergistically with the thioether to provide a significant improvement in oxidation control.

Please replace the paragraph beginning at page 3, line 15, with the following rewritten paragraph:

Lubricant compositions containing various hindered phenolics are widely known in the art. Less widely known is the use of thioethers in lubricant compositions. The present invention is directed to a specific optimum blend of hindered phenolic antioxidant and thioether that is a unique composition previously unknown in the art.

Please replace the paragraph beginning at page 12, line 14, with the following rewritten paragraph:

Mixtures of butyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate and ~~ditridecyldithiopropionate~~ ditridecyldithiopropionate (Naugard® DTDTP) were studied and compared to thiodiethylene bis (3,5-di-tert-butyl-4-hydroxyhydrocinnamate) (Durad® AX-15; Great Lakes Chemical). The case was studied in which the mixture of butyl-3-(3,5-di-tert-

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butyl-4-hydroxyphenyl)propionate and ~~ditridecyldithiopropionate~~ ditridecyldithiopropionate was adjusted to provide the same number of moles of phenolic and sulfide to the oil as would be provided by 1 weight percent of thiodiethylene bis (3,5-di-tert-butyl-4-hydroxyhydrocinnamate) (UNOT # 153 & 154). This mole-adjusted mixture gave performance as good as thiodiethylene bis (3,5-di-tert-butyl-4-hydroxyhydrocinnamate) at equal moles. The ~~ditridecyldithiopropionate~~ ditridecyldithiopropionate at 1 weight percent is not as effective alone as it is in combination with the hindered phenolic antioxidant. The results are shown in TABLE 2.

TABLE 2 % Δ Kinetic Viscosity @ 40° C				
Time (Hours)	24.00	48.00	72.00	96.00
HDD with no antioxidant, but with 1 weight percent carbon black:				
UNOT # 121 (1)	0.62	-12.93	15.22	120.32
UNOT # 120 (2)	-0.89	-10.29	13.51	126.36
HDD with 1 weight percent Durad AX-15 and 1 weight percent carbon black:				
UNOT # 155 (2)	3.95	7.36	8.38	34.14
UNOT # 156 (1)	2.76	6.51	6.77	30.45
HDD with 1 weight percent DTDTDP and 1 weight percent carbon black:				
UNOT # 159 (2)	1.56	-9.50	-.018	48.44
UNOT # 160 (1)	0.11	-12.11	7.88	109.01
HDD with 1.84 weight percent C ₄ -HP:DTDTDP* blend and 1 weight percent carbon black:				
UNOT # 161 (2)	1.93	3.49	1.72	33.61
UNOT # 162 (1)	4.62	6.14	4.93	35.54

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* C₄-HP is butyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate and DTDTP is
ditridecyldithiopropionate ditridecyldithiopropionate.